

Homework 12

Math 147 (section 501–502–503), Spring 2015

This homework is due on Wednesday, April 15.

0. Read Sections 2.1, 2.2, and 5.6.1–5.6.2. After reading these sections, you should be able to answer the following questions (which are *not* to be turned in).
 - What is a *population growth constant*?
 - What is the limit of the sequence $a_n = (-\pi)^n$?
 - How are the limit laws for sequences related to the limit laws for functions?
1. Determine the population growth constant for each of the following population models:
 - (a) $N_t = 5e^3 e^{0.2t}$
 - (b) $N_t = 5e^{3t} e^{0.2t}$
2. Determine if the limits of the following sequences (or if the limit does not exist, explain why not).
 - (a) $a_n = (-2)^n$
 - (b) $a_n = (-1/2)^n$
 - (c) $a_n = e^{-n}$
 - (d) $a_n = n \cdot e^{-n}$
 - (e) $a_n = \cos(\pi n)$
 - (f) $a_n = \sin(\pi n)$
 - (g) $a_n = \frac{-n^3 - 2}{2n^2 + 6n - 12}$
 - (h) $a_n = 6 + \frac{\sin(\frac{\pi}{6}n)}{5 + \ln n}$
3. Section 2.1 # 10, 16, 28, 56, 64
4. Section 2.2 # 30, 90, 98
5. Section 5.6 # 4, 6
6. (These problems are *not* to be turned in!)
 - (a) Section 2.1 # 7, 13, 19, 25, 35, 43, 37
 - (b) Section 2.2 # 11, 29, 31, 43, 51, 91, 97, 99, 101, 103, 105, 109
 - (c) Section 5.6 # 1, 3, 7, 9, 13